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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/856,543	12/13/2001	Gerhard Hartwich	PATKRI P01AUS	9206

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EXAMINER

RILEY, JEZIA

ART UNIT

PAPER NUMBER

1637

DATE MAILED: 09/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/856,543

Applicant(s)

HARTWICH ET AL.

Examiner

Jezia Riley

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 June 2004.
 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 29-37 and 44-88 is/are pending in the application.
 4a) Of the above claim(s) 29-37, 44-55, 61-63, 65, 67-70 and 72-83 is/are withdrawn from consideration.
 5) ☒ Claim(s) 84-88 is/are allowed.
 6) ☒ Claim(s) 56, 58-60 and 64 is/are rejected.
 7) ☒ Claim(s) 57, 60, 66 and 71 is/are objected to.
 8) ☒ Claim(s) 29-37 and 44-88 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date _____.
 4) ☐ Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____.
 5) ☐ Notice of Informal Patent Application (PTO-152)
 6) ☐ Other: _____.

DETAILED ACTION

Response to Remarks

1. Applicants' arguments and amendments, filed on 6/28/04, have been approved and entered. Rejections and/or objections not reiterated from previous office actions are hereby withdrawn. The following rejections and/or objections are either newly applied or reiterated. They constitute the complete set presently being applied to the instant application.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 56, 58-60, 64 are rejected under 35 U.S.C. 102(e) as being anticipated by Keen (US 6,060,327).

Keen discloses a sensor for sensing the presence of an analyte component without relying on redox mediators. This sensor includes (a) a plurality of conductive polymer strands each having at least a first end and a second end and each aligned in a substantially common orientation; (b) a plurality of molecular recognition headgroups having an affinity for the analyte component and being attached to the first ends of the

conductive polymer strands; and (c) an electrode substrate attached to the conductive polymer strands at the second ends. The electrode substrate is capable of reporting to an electronic circuit reception of mobile charge carriers (electrons or holes) from the conductive polymer strands. The electrode substrate may be a photovoltaic diode. Also disclosed is method of forming a sensor capable of sensing the presence of an analyte component. This method includes (a) contacting a sensor substrate (e.g., a device element of a device on semiconductor chip) with a first medium containing mobile conductive polymer strands or precursors of the conductive polymer strands; (b) applying a first potential to the substrate sufficient to form a first structure having the conductive polymer strands affixed to the substrate; (c) contacting the sensor substrate, with affixed conductive polymer strands, with a second medium containing mobile molecular recognition headgroups; and (d) applying a second potential to the substrate sufficient to affix the molecular recognition headgroups to the affixed conductive polymer strands. (abstract, Summary and figures).

In a preferred embodiment, DNA or nucleic acid is used as the conducting polymer precursor to be electrochemically deposited and uniaxially oriented into a highly conductive liquid crystalline form on the semiconductor substrate surface. Single-stranded DNA is not electrically conductive as a molecular wire. It is a random coil with little order. However, double-stranded A-, B-, or Z-DNA are examples of flat heteroaromatic purine and pyrimidine π -stacked base pairs (i.e., heteroaromatic π -stacking of flat base pairs, one on top of the next in a rising helix) that makes double-stranded DNA conductive. Preferably, a liquid crystal B-DNA type double-stranded

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structure is deposited, electrically attached, and uniaxially oriented in parallel extended conformation orthogonal to the surface of a semiconductor in specific chemically or electrochemically activated regions (as shown in FIG. 2). (col.30)

The substrate and its surface may also be chosen to provide appropriate crystal or non-crystal lattice structure, wafer or thin film orientation, n- and p-type doped materials, surface texture, back metal pattern, grid metal pattern, surface chemistry, etc. The raw macro-solid substrate may be composed of a semiconductor or standard electrical component. Preparation of surfaces by lapping, polishing, chemical treatment, ion implantation, photolithography, etching, chemical vapor deposition (CVD), molecular beam epitaxy (MBE), etc. may provide a patterned macro-solid substrate.

4. Claims 57, 60, 66, and 71 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. Claims 84-88 are allowed.

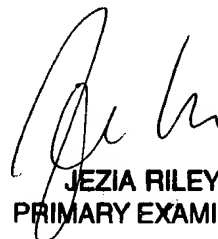
6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jezia Riley whose telephone number is 571-272-0786. The examiner can normally be reached on 9:30AM - 5:00PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached on 571-272-0782. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Thursday, September 02, 2004



JEZIA RILEY
PRIMARY EXAMINER